UNITED STATES PATENT AND TRADEMARK OFFICE

SERIAL NO: 76/127133

APPLICANT: DIGITAL OILFIELD INC

[redacted]

CORRESPONDENT ADDRESS:
THOMAS J. MOORE
BACON & THOMAS PLLC
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Commissioner for Trademarks
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Alexandria, VA 22313-1451

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MARK: DIGITAL OILFIELD

CORRESPONDENT'S REFERENCE/DOCKET NO: TJM/DIGIT23U

CORRESPONDENT EMAIL ADDRESS:

Please provide in all correspondence:

1. Filing date, serial number, mark and applicant's name.
2. Date of this Office Action.
3. Examining Attorney's name and Law Office number.
4. Your telephone number and e-mail address..

Serial Number 76/127133

The trademark examining attorney has carefully reviewed the October 6, 2006 request for reconsideration and is not persuaded by applicant's arguments. No new issue has been raised and no new compelling evidence has been presented with regard to the point(s) at issue in the final action. TMEP §715.03(a). Therefore, the request for reconsideration is **denied** and the final refusal is continued. 37 C.F.R. §2.64(b); TMEP §715.04.

Please see the attached NEXIS stories and Internet excerpts that show DIGITAL OILFIELD is generic for the applicant's goods and services.

The filing of a request for reconsideration does *not* extend the time for filing a proper response to the final action, which runs from the date the final action was mailed. 37 C.F.R. §2.64(b); TMEP §§715.03 and 715.03(c).

The application is being returned to the Trademark Trial and Appeal Board for resumption of the appeal.

/Kim Saito/
Examining Attorney, Law Office 102
571-272-9214

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SECTION: BUSINESS NEWS

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BODY:

bc-SAP-Ecosystem-Oil&Gas photo 01-30

1/8STK 3/8 SAP

1/8IN 3/8 CPR STW WRK OIL

1/8SU 3/8

-- WITH LOGO -- TO BUSINESS, ENERGY AND TECHNOLOGY EDITORS:

SAP Ecosystem Powers Collaboration and Innovation Among Oil and Gas Industry Customers and Partners

Oil and Gas Industry Value Network Joins Existing Seven IVNs to Bring Together Customers and Partners to Address Industry Pain Points

WALLDORF, Germany, Jan. 30 /PRNewswire-FirstCall/ -- Continuing to deliver on a commitment to drive community-based innovation and support the adoption of the SAP NetWeaver(R) platform, SAP AG (NYSE: SAP) today announced its eighth industry-focused collaboration effort, the industry value network (IVN) for oil and gas. As the undisputed leader of business solutions for the oil and gas industry, SAP has expanded the successful IVN model to bring together

a network of independent software vendors (ISVs), systems integrators (SIs) and technology vendors with SAP and executives from leading oil and gas customer companies to solve customers' most pressing business challenges through the creation and improvement of industry-relevant business processes. The IVN for oil and gas joins existing IVNs in the banking, chemicals, consumer products, high tech, retail, public sector and forest and paper industries.

(Logo: http://www.newscom.com/cgi-bin/prnh/20050310/SFTH009LOGO-a)

"Today, achieving leading-edge innovation requires the input of more than one business entity and IT vendor," said Bob Martin, SAP integration project manager, Conoco Phillips and chairman of the SAP Oil & Gas Global Industry Advisory Council. "The SAP Oil & Gas Global Industry Advisory Council sees industry ecosystem collaboration supported by SAP's industry value networks as the way of the future. The IVN for oil and gas can achieve customer value by leveraging the web of expertise, solutions and capabilities to address our most pressing business challenges. We see promise in this unique approach to enable us to increase our productivity and supply chain performance, lower total cost of ownership and provide a new level of interoperability and standards."

Joining Forces To Address Needs of Oil and Gas Companies

The existing SAP Oil & Gas Global Industry Advisory Council includes 17 companies -- all major integrated oil companies, large national and midsize thought leaders -- such as Conoco Phillips, Holly Corporation, Petrobras, Statoil and Tesoro. The members of the advisory council will work with SAP and partner IVN members to build new solutions for the oil and gas industry. To

date, IVN members include Accenture, HP, IBM, Implico, KSS, LogicaCMG, Meridium, NRX, Quorum Business Solutions, TechniData, Triple Point, Vendavo and others. IVN members will collaborate to deliver solutions and integration scenarios to address industry-specific pain points including the need to maintain assets and secure or grow reserves to meet the world's increasing demand for energy. Oil and gas companies are faced with addressing these fundamental challenges as their business environment becomes increasingly complex and changes rapidly due to growing geopolitical uncertainty, limited access to new resources, globalization and the changing influence of national oil companies.

To help accelerate development of software innovations necessary for this industry to address such challenges, members of the IVN for oil and gas are initially collaborating on the focus topics of the digital oil field and the hydrocarbon supply chain. For these focus topics, the IVN members are working together to deliver solutions for integrated exploration and production, land lease management, real-time gas allocation management, asset life-cycle management, secondary distribution and terminal management, commodity trading, and price optimization and margin management. By delivering pre-integrated, standard, end-to-end solutions and services based on a common technology platform, SAP NetWeaver, the solutions resulting from the IVN collaboration will help customers avoid costly integration projects.

Collaboration Between Customers, Partners and SAP Already Paying Off

SAP's IVN concept of community collaboration is already paying dividends for IVN members, in projects with customers and partners.

SAP and Triple Point Technology are working with the Holly Corporation, an independent petroleum refiner and marketer, and other SAP oil and gas

customers on a front-to-back office solution integrating Triple Point's real-time trading and risk management systems (Commodity SL) with SAP logistical software to enable companies to optimize the procurement, marketing and trading of commodities.

"The resulting solution of our close collaboration with SAP and Triple Point Technology is exactly what we have been seeking to integrate our trading and risk management functions seamlessly with all of our back-office and other operations managed by SAP," said Mark Evans, director, SAP Projects, Holly Corporation. "By combining market-based financial valuations with physical movements and taking advantage of real-time data, we can now make buy/sell decisions that enhance profit and give us a significant competitive advantage. This unique multi-vendor approach, embodied by the IVN, will play a critical role in addressing our needs and providing the innovation and integrated end-to-end solutions we need for being successful. We see the IVN initiative as a true catalyst and enabler for increased customer value."

In other initiatives of the IVN for oil and gas, SAP has worked together with Implico and Accenture on a series of projects in the areas of secondary distribution management and the digital oil field, respectively.

The volume and price volatility experienced in the secondary distribution of the value chain can lead to station run-outs, poor fleet utilization and expedited deliveries. Implico has collaborated with SAP to design and deliver a packaged solution that not only addresses these issues but does so in a rapidly deployable and predictable cost manner. The resulting applications, SAP(R) Oil & Gas Secondary Distribution and Implico OpenTAS, have already delivered improved inventory management, reduced transportation expenses,

increased sales and reduced days sales outstanding for several companies within the industry.

"While our initial collaboration with SAP has already delivered some key innovations, we see the IVN initiative providing the necessary framework and foundation of network collaboration to drive the next level of innovations for the industry segment we serve," said Thomas Ernst, managing director, Implico. "We are excited about these new development and market opportunities that the industry value network provides to partners."

The digital oil field is both a solution and a problem, producing more data than ever before. It is critical for oil and gas companies to make the most of all that new information. SAP and Accenture teamed up to accelerate the well delivery process and efficiently manage well maintenance operations. Accenture and SAP will continue working together in the IVN for oil and gas to enhance the solution to include support for additional functions for the integrated upstream oil and gas value chain.

SAP's Open Ecosystem Encourages Co-Innovation

As part of its platform strategy, SAP is building an open ecosystem to drive adoption of enterprise service-oriented architecture (enterprise SOA); foster co-innovation between SAP, customers and partners; and deliver value for all participants. Building on its deep industry knowledge and diverse community of partners and leveraging SAP NetWeaver as a platform for product and service innovation, SAP and its ecosystem are driving new dimensions of collaboration -- turning breakthrough ideas into innovative solutions for customers.

"With the IVN for oil and gas, SAP and its partners are bringing unmatched industry expertise, best practice business processes and platform leadership

-- plus the overall power of the ecosystem -- to tackle and solve our customers' most critical business challenges," said Holger Kisker, vice president, oil & gas industry business unit, SAP. "Together with our partners, SAP is driving innovation, interoperability, standards and thought leadership for our customers. Most importantly, the IVN further empowers customers to be active participants in the SAP ecosystem and key contributors to innovating new business processes relevant to their individual needs."

About SAP for Oil & Gas

SAP(R) for Oil & Gas is a solution set that combines mySAP(TM) Business Suite applications with tailored functionality to meet the unique needs of companies specializing in exploration, production, refining, distribution, trading, marketing, and sales of petroleum-based products. This solution portfolio offers best practices for adaptive supply chain management, efficient enterprise asset management and improved customer relationship management. Based on the open architecture of the SAP NetWeaver(R) platform, SAP for Oil & Gas enables seamless integration of business processes and third-party systems

About SAP

SAP is the world's leading provider of business software. Today, more than 38,000 customers in more than 120 countries run SAP(R) applications -- from distinct solutions addressing the needs of small businesses and midsize companies to suite offerings for global organizations. Powered by the SAP NetWeaver(R) platform to drive innovation and enable business change, SAP software helps enterprises of all sizes around the world improve customer relationships, enhance partner collaboration and create efficiencies across

their supply chains and business operations. SAP solution portfolios support the unique business processes of more than 25 industries, including high tech, retail, financial services, healthcare and the public sector. With subsidiaries in more than 50 countries, the company is listed on several exchanges, including the Frankfurt stock exchange and NYSE under the symbol "SAP." (Additional information at http://www.sap.com)

() SAP defines business software as comprising enterprise resource planning and related applications such as supply chain management, customer relationship management, product life-cycle management and supplier relationship management.

Any statements contained in this document that are not historical facts are forward-looking statements as defined in the U.S. Private Securities Litigation Reform Act of 1995. Words such as "anticipate," "believe," "estimate," "expect," "forecast," "intend," "may," "plan," "project," "predict," "should" and "will" and similar expressions as they relate to SAP are intended to identify such forward-looking statements. SAP undertakes no obligation to publicly update or revise any forward-looking statements. All forward-looking statements are subject to various risks and uncertainties that could cause actual results to differ materially from expectations The factors that could affect SAP's future financial results are discussed more fully in SAP's filings with the U.S. Securities and Exchange Commission ("SEC"), including SAP's most recent Annual Report on Form 20-F filed with the SEC. Readers are cautioned not to place undue reliance on these forward-looking statements, which speak only as of their dates.

NOTE: SAP, R/3, mySAP, mySAP.com, xApps, xApp, SAP NetWeaver and other SAP products and services mentioned herein as well as their respective logos

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are trademarks or registered trademarks of SAP AG in Germany and in several other countries all over the world. All other product and service names mentioned are the trademarks of their respective companies. Data contained in this document serve informational purposes only. National product specifications may vary.

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January 30, 2007 Tuesday 11:00 AM GMT

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HEADLINE: SAP Ecosystem Powers Collaboration and Innovation Among Oil and Gas Industry Customers and Partners;
Oil and Gas Industry Value Network Joins Existing Seven IVNs to Bring Together Customers and Partners to Address Industry Pain Points

DATELINE: WALLDORF, Germany Jan. 30

BODY:

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HEADLINE: Landmark Introduces an Affordable and Scalable Volume Visualization and Interpretation Solution

DATELINE: NEW ORLEANS

BODY:

Landmark, a brand of the Halliburton (NYSE:HAL) Digital and Consulting Solutions division, is introducing a new high-performance team-room visualization and interpretation solution at the Society of Exploration Geophysicists (SEG) trade show in New Orleans. This new solution features Landmark software, the Verari Systems E&P 7500 visualization server and high-end NVIDIA Quadro graphics. It is specifically designed to help upstream oil and gas companies affordably manage large regional data sets, utilize advanced multi-attribute visualization and enable rapid, basin-scale decision making. Landmarks GeoProbe software, optimized for the DecisionSpaces most powerful visualization and interpretation solution. The new E&P 7500 server, with up to eight powerful AMD Opteron processors, 128 gigabytes of memory and high-end NVIDIA Quadro graphics, is the only visualization server technology that takes full advantage of GeoProbe softwares advanced functionality and that is approved for the entire Landmark suite.

With this solution, entire regional data sets can be investigated in detail, highlighting large-scale trends. These trends are easily missed when having to view identical data broken into multiple smaller-sized subsets. In order to help customers experience first hand the price-performance value of this solution, Landmark will be showcasing a fully configured E&P 7500 server with optional NVIDIA Quadro Plex 1000 visual computing system in its SEG booth No. 1326. As part of the Landmark theater presentations, Chris Loader, Petroleum Geo-Services (PGS) geophysical advisor, and David M Roberts, 3-DMR consultant in visualization, seismic interpretation and development geoscience, will use this solution and the PGS Southern North Sea (SNS) 3-D MegaSurvey to dramatically visualize and interpret 45,000-square kilometers of 3-D seismic data formed from the combination of the seismic data from more than 100 different 3-D surveys. The E&P 7500 server and NVIDIA Quadro Plex 1000 systems are valuable additions to Landmarks portfolio of E&P-optimized computing and infrastructure solutions, said Douglas Meikle, vice president, Landmark and Project Management. With a price of less than $100,000 USD, a fully configured E&P 7500 is a natural and extremely cost-effective upgrade solution for those customers looking to replace their proprietary Unix-based solutions and to power

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multidisciplinary team-room environments. The development of the Verari Systems E&P 7500 server and our latest relationship with Landmark create a powerful and cost-effective solution for oil and gas companies that are managing and operating digital oil fields, said David B. Wright, CEO, Verari Systems. We are excited to bring to market the worlds most scalable, industry-standards-based visualization solutions specifically designed to support the compute-intensive oil and gas industry and to meet its demanding needs. Landmark, a brand of Halliburton Drilling, Evaluation and Digital Solutions, is the leading supplier of software, optimized computing solutions and services for the upstream oil and gas industry. The companys software solutions span exploration, production, drilling, business-decision analysis and data management. Landmark offers a broad range of consulting, services and infrastructure technologies that enable customers to optimize their technical, business and decision processes. Visit the Landmark Web site at for more information on Landmark software, solutions and services. Verari Systems, Inc. is the premier developer of powerful, flexible and scalable platform-independent blade computing and rackmount systems that are defining a new era in high-performance utility computing for the enterprise datacenter. Enterprises such as Akamai, Lockheed Martin, Lucasfilm Ltd., Northrop Grumman, Qualcomm, Sony Pictures Imageworks, Veritas DGC and Walt Disney Feature Animation are among more than 4,000 customers who have chosen Verari Systems' line of high-density blade server clusters, rack-optimized servers and award-winning software solutions. To learn more about Verari Systems and the E&P 7500 server, please visit or call NVIDIA Corporation is the worldwide leader in programmable graphics processor technologies. The company creates innovative, industry-changing products for computing, consumer electronics and mobile devices. NVIDIA is headquartered in Santa Clara, California, and has offices throughout Asia, Europe and the Americas. For more information, please visit .

Landmark, a brand of the Halliburton (NYSE:HAL) Digital and Consulting Solutions division, is introducing a new high-performance team-room visualization and interpretation solution at the Society of Exploration Geophysicists (SEG) trade show in New Orleans. This new solution features Landmark's GeoProbe(R) software, the Verari Systems(TM) E&P 7500 visualization server and high-end NVIDIA (R) Quadro(R) graphics. It is specifically designed to help upstream oil and gas companies affordably manage large regional data sets, utilize advanced multi-attribute visualization and enable rapid, basin-scale decision making.

Landmark's GeoProbe software, optimized for the DecisionSpace(R) environment, is the industry's most powerful visualization and interpretation solution. The new E&P 7500 server, with up to eight powerful AMD Opteron(R) processors, 128 gigabytes of memory and high-end NVIDIA(R) Quadro(R) graphics, is the only visualization server technology that takes full advantage of GeoProbe software's advanced functionality and that is approved for the entire Landmark suite.

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"The E&P 7500 server and NVIDIA Quadro Plex 1000 systems are valuable additions to Landmark's

portfolio of E&P-optimized computing and infrastructure solutions," said Douglas Meikle, vice president, Landmark and Project Management. "With a price of less than $100,000 USD, a fully configured E&P 7500 is a natural and extremely cost-effective upgrade solution for those customers looking to replace their proprietary Unix(R)-based solutions and to power multidisciplinary team-room environments."

"The development of the Verari Systems E&P 7500 server and our latest relationship with Landmark create a powerful and cost-effective solution for oil and gas companies that are managing and operating digital oil fields, " said David B. Wright, CEO, Verari Systems. "We are excited to bring to market the world's most scalable, industry-standards-based visualization solutions specifically designed to support the compute-intensive oil and gas industry and to meet its demanding needs."

About Landmark

Landmark, a brand of Halliburton Drilling, Evaluation and Digital Solutions, is the leading supplier of software, optimized computing solutions and services for the upstream oil and gas industry. The company's software solutions span exploration, production, drilling, business-decision analysis and data management. Landmark offers a broad range of consulting, services and infrastructure technologies that enable customers to optimize their technical, business and decision processes. Visit the Landmark Web site at www.lgc.com for more information on Landmark software, solutions and services.

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About NVIDIA Corporation

NVIDIA Corporation is the worldwide leader in programmable graphics processor technologies. The company creates innovative, industry-changing products for computing, consumer electronics and mobile devices. NVIDIA is headquartered in Santa Clara, California, and has offices throughout Asia, Europe and the Americas. For more information, please visit www.nvidia.com.

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LENGTH: 872 words

HEADLINE: Dr. Scott Shemwell Appointed Wescorp Energy's Chief Operating Officer

DATELINE: EDMONTON, ALBERTA; Oct 02, 2006

BODY:

Wescorp Energy Inc. (OTCBB: WSCE) is pleased to announce Dr. Scott Shemwell as its Chief Operating Officer (COO). Dr. Shemwell specializes in leading energy technology organizations through the transformation process. Some of the major companies Dr. Shemwell has worked for include:

Schlumberger (SLB - NYSE)

- Senior Field Engineer

Halliburton (HAL - NYSE)

- Head, IT Product Service/Line & Chairman of the Landmark Graphics Acquisition team

EDS / MCI Systemhouse (EDS - NYSE)

- Managing Director - Solutions Group (Energy Division)

Oracle (ORCL - NASDAQ)

- Vice President - Energy & Chemical Industry

He is currently a senior advisor to major energy companies where he emphasizes "lean energy" concepts. His background and expertise make him uniquely qualified to guide energy companies to create economical, efficient " digital oilfields " of the future.

For over 25 years, Dr. Shemwell has led the turnaround and transformation process for global S&P 500 organizations as well as start-up and professional services firms. His specific experience includes Executive Management, Information Management, Mergers and Acquisitions, Change Management and International Business.

He was a business unit head with P&L responsibility and a member of the executive leadership team (directly under the CEO) for Halliburton Energy Services. He had been in key management roles overseeing over $5 billion in mergers, acquisitions, and divestitures. Most recently, he directed Oracle's Energy Practice as Vice President and was the executive responsible for driving the strategic direction and business development efforts for the $10 billion firm's global energy and chemical business sectors. Dr. Shemwell is currently the President of Strategic Decision Sciences, LLC, a consulting company specializing in Business Analytics and Risk Mitigation (www.StrategicDecisionSciences.com).

As to his new role at Wescorp, Dr. Shemwell comments," Wescorp is ready to move to the next level. It has a very competent and professional staff at all levels. Its current and future technologies are critical for the efficiencies that are needed by today's energy companies. Flowstar's accurate measurement, timely data collection and secure data storage are key elements in creating economic digital oilfields. I am keenly aware of the challenges currently experienced by several major energy companies with respect to poor measurement and data collection, and am confident that the Flowstar solution will significantly increase their bottom line. Our involvement with Ellycrack A/S creates an opportunity to move the refinery process closer to the wellhead. If the further extensive testing in Canada confirms the results from Norway, the impact on Wescorp will be very significant. And, we will continue to make acquisitions that are consistent with the vision of the company."

Doug Biles, CEO and President of Wescorp states, "Scott's wealth of experience and established business relationships within the energy sector are priceless. His guidance and leadership as COO will significantly increase the speed with which our business units will grow and develop. I am sure that Wescorp will accelerate its growth having Scott as our new business leader."

About Wescorp

Wescorp Energy Inc. (www.wescorpenergy.com) is an energy services and engineering company committed to commercializing new technologies that maximize existing production while increasing economically recoverable petroleum reserves. The company has the drilling, production, and process optimization expertise to deliver technology solutions to market in a

timely, economic and environmentally friendly manner.

Our Flowstar Technologies Inc. division (www.flowstardcr.com) produces advanced natural gas and gas liquids measuring devices based on a patented turbine-based Digital Chart Recorder (DCR) metering system. DCR meters are self-contained energy-efficient units with integrated flow computers that are more accurate, easy to install and cost-effective than conventional flow-metering systems. They install directly near the well-head and do not require external power, metering loops, heated shelters or alcohol injectors to protect them from weather condition to -50 degrees C.

Our Ellycrack joint-venture (www.ellycrack.com) is providing a permanent heavy oil upgrading pre-processing technology enabling low-cost transport to the refinery.

Wescorp shares currently trade on the NASD-OTCBB Exchange under the

symbol "WSCE."

Safe Harbor Statement

Any statements contained herein that are not historical facts are

forward-looking statements, and involve risks and uncertainties.

Potential factors could cause actual results to differ materially from

those expressed or implied by such statements. Information on the

potential factors that could affect the Company's actual results of

operations is included in its filings with the Securities and Exchange

Commission. These risks may be further discussed in periodic reports and

registration statements to be filed by the Company from time to time

with the Securities and Exchange Commission in the future.

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LOAD-DATE: October 3, 2006

PR Newswire US

July 12, 2006 Wednesday 6:49 PM GMT

LENGTH: 517 words

HEADLINE: Weatherford Signs Three-Year Agreement With Statoil; Development Cooperation Agreement Signed for New Fiber-optic Technology

DATELINE: TRONDHEIM, Norway July 12

BODY:

TRONDHEIM, Norway, July 12 /PRNewswire-FirstCall/ -- Weatherford International Ltd. (NYSE:WFT) today announced that it has signed a three-year Technology Development Cooperation Agreement with Statoil ASA to develop new fiber-optic based sensing and communication systems to extend the life of oil and gas fields.

This agreement is part of the ongoing Statoil Subsea Increased Oil Recovery (SIOR) initiative, which aims to increase oil recovery and accelerate daily production rates.

The primary goal of the project is to provide and deliver reservoir, wellbore and subsea data to shore through an integrated fiber-optic communications network. The two companies will focus on both the development of new downhole optical sensing systems and an integrated fiber-optic subsea communication system. The agreement also calls for field testing in both existing Statoil "brown field" as well as new "green field" assets. Statoil will identify and execute pilots on the Norwegian continental shelf where new technologies will be tested and deployed.

"The goal of the project is to develop smart sensors and subsea communication infrastructure to improve our overall reservoir and production management. This is the latest in a series of collaborative development projects involving Statoil and Weatherford, and will build on the past successes shared by the two companies," said Rolf H. Utseth, vice president of research and technology, Subsea Increased Oil Recovery, Statoil.

The communication infrastructure will enable Statoil to implement an entire range of new solutions that require a high and secure bandwidth. Weatherford has reached agreements with both FMC Kongsberg Subsea and Nexans Norway to work on this communication system initiative.

Dharmesh Mehta, vice president of production optimization for Weatherford stated, "This project allows Weatherford to further increase its optical sensing portfolio plus integrate all of these sensors into

a new generation subsea communications architecture. Given the projected growth of the subsea segment in our industry, the timing of this joint development project is strategically very important for all the participants. The role it plays in delivering the digital oilfield vision -- shared by so many in our industry -- is very transparent."

Norwegian-based Statoil is an integrated oil and gas company represented in 33 countries with approximately 25,644 employees. Statoil is engaged in exploration and production activities in 15 of the aforementioned countries.

Weatherford is one of the largest global providers of innovative mechanical solutions, technology and services for the drilling and production sectors of the oil and gas industry. Weatherford operates in over 100 countries and employs more than 29,000 people worldwide.

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Web site: http://www.weatherford.com/

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LOAD-DATE: July 13, 2006

June 28, 2006 Wednesday 10:44 AM EST

LENGTH: 191 words

HEADLINE: Schlumberger buys Quorum software

DATELINE: HOUSTON, June 28

BODY:

Oil-exploration giant Schlumberger bought out a production volumes management technology application from Quorum Business Solutions.

Schlumberger Information Solutions bought out the Quorum volume management software, which is a field operations data management system used in managing oilfields in North America and beyond. Under the deal, SIS will acquire all rights to the QVM software as well as key development personnel.

"The acquisition of the QVM technology supports our vision of the digital oilfield by expanding our portfolio beyond conventional industry offerings to include production operations, engineering, management and accounting," said Olivier Le Peuch, president of SIS, a wholly owned subsidiary of Schlumberger.

Meanwhile, Quorum's chief executive stated that the company is focusing its efforts on delivering best-in-class back-office software solutions and will retain the portfolio of production and revenue accounting tools. We are excited to partner with Schlumberger to offer for the first time in our industry the ability to streamline business processes all the way from field operations through production accounting."

LOAD-DATE: June 29, 2006

Business Wire

May 1, 2006 Monday 8:54 PM GMT

DISTRIBUTION: Business Editors; Energy Editors; High-Tech Editors

LENGTH: 398 words

HEADLINE: Halliburton Unveils eRedBook(TM) Software, the Industry's Most Comprehensive Digital Technical Toolkit

DATELINE: HOUSTON May 1, 2006

BODY:

Halliburton (NYSE:HAL) today introduced its eRedBook(TM) software, a complete digital toolkit that offers quick and reliable calculators for computations used in daily operations; an interactive wellbore tool that enables users to share well schematics faster than ever before; product information from all Energy Services Group product service lines; as well as the American Petroleum Institute's (API) most up-to-date pipe data, among other resources. The eRedBook software evolved from the trusted RedBook(TM) cementing tables reference guide, which Halliburton pioneered and first published in 1929.

"Halliburton is committed to making life easier for our customers," said David King, senior vice president of global operations for Halliburton's Energy Services Group. "eRedBook software is the most user-friendly, most complete digital oilfield toolkit available today, and it's simply a smarter way for industry professionals to work."

Available at no cost on Halliburton's Web site, the eRedBook software can be downloaded by customers and students alike in its entirety, or they can choose only those sections required to meet their needs. The software interface is designed to be intuitive for users, with a straightforward navigation system that allows for faster access to accurate information, calculations and design tools to help improve decision making.

The eRedBook software contains all the data from the original, hardcopy RedBook reference guide. It features significantly expanded content that makes it a complete and easily accessible resource, and it enables users to transfer data into other mediums such as e-mail or word processing applications. With an internet connection eRedBook's self-update function will automatically download new content, including calculators, revised API pipe data, and additional features as they become available, providing users a single toolkit for the pertinent, timely information they need for their jobs.

Halliburton, founded in 1919, is one of the world's largest providers of products and services to the petroleum and energy industries. The company serves its customers with a broad range of products and services through its Energy Services Group and KBR. Visit the company's World Wide Website at www.halliburton.com.

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URL: http://www.businesswire.com

LOAD-DATE: May 2, 2006

The Houston Chronicle

April 30, 2006 Sunday
2 STAR EDITION

SECTION: BUSINESS; Pg. 1

LENGTH: 1158 words

HEADLINE: OTC;
Innovations reach new depths;
Energy industry pushes hard in its search for fossil fuels

BYLINE: LYNN J. COOK, STAFF

BODY:

THINK Chicago's Sears Tower is tall? An even taller structure was engineered in Houston and built in Corpus Christi before it was barged across the ocean to Africa.

The compliant piled tower designed by Mustang Engineering is a massive steel structure on top of which sits a drilling and production platform for Chevron's $2.3 billion Benguela-Belize oil and natural gas project off the shore of Angola.

The tower was attached to the ocean floor and, even though most of it is underwater now, it ranks as one of the world's tallest structures.

Benguela-Belize and other break-through projects and technologies are in the spotlight at this year's Offshore Technology Conference, which runs Monday through Thursday at Reliant Center.

As energy companies are forced into deeper and deeper waters to find more oil and gas, the challenges are ratcheting up significantly, said Jonathan Lewis, Houston-based Halliburton's vice president of innovation.

Lewis' focus has been finding new ways to use 3-D visualization and digital technology to ferret out fossil fuels without energy companies needing to hire more field technicians.

"There's no need to have as many people in the field today," he said. "Especially with the labor shortage issues we're all concerned about, we need to leverage professionals in the very best way we

know how."

Lewis is hoping energy companies will buy into Halliburton's Real Time Decision Center, which pairs gadgetry from the likes of Intel, Sony and Silicon Graphics with the skilled people who make decisions about how to drill wells. Halliburton's contention is that putting all of those people and all of that technology in one room speeds up the entire process.

Traditionally, the geologists, geophysicists, reservoir engineers and production specialists who develop these energy projects have worked in a segregated way, within their own silo of expertise, Lewis said.

Despite the fact that today workers in a downtown office tower can use remote-controlled, joystick-operated digital setups to help drill wells in the deep waters of the Gulf of Mexico or sandy dunes of Saudi Arabia, some of them just don't want to.

"Technology is the easy part - a walk in the park, frankly - compared to changing the behavior of reservoir engineers and production specialists who are used to doing things a certain way. We have to make sure people aren't the roadblocks to getting a better rate of return on investments and producing more oil and gas," Lewis said.

Shell and Saudi Aramco have been big adopters of Halliburton's digital oil-field technology, and Lewis hopes others will be convinced to follow suit by customer claims of shaving down drilling costs significantly.

Starting from scratch

Slashing costs and the sheer size of equipment are the two motivators behind Houston-based Azura's new subsea tree, the Nautilus SS-10, which is making its debut at the OTC this week.

Subsea trees are standard valve and gauge equipment used on offshore wells to control the flow of oil and gas. But Azura CEO Curtis Burton says his subsea trees are half the cost of traditional trees and one-quarter the size.

"There's been so much emphasis on taking what's been done on land before and adapting it for the offshore, we found a lot of unnecessary parts and costs associated with this equipment. We sat down with a blank sheet of paper and said, 'If we could start over, what would we do?' " Burton says.

To start with, Burton's team wanted to cut down the number of days it took to install subsea trees. That meant eliminating parts and simplifying the design.

Burton hired Earl Broussard, who helped design the first subsea tree to withstand 15,000 pounds of pressure per square inch for a Chevron deep-water project. For Azura, he focused on creating a subsea tree that can be paired with other companies' technology without expensive crossover systems to link it with the existing hardware.

Burton says the typical subsea tree takes 10 to 12 days to install and and requires an average of 34 tools. Azura's new tree takes two to three days to install and needs only four tools to get it into place.

"If you're looking at $600,000 a day in rig costs, then we've just saved you a whole lot of money," he says.

Tentative approach

But when it comes to new offshore technology, most companies don't want to be the first to try it out.

"You get a lot of people lining up for Serial No. 002," Burton said, adding, "We know this works because all these pieces have worked before. We're using hardware that oil companies have 10 of in the field already."

FMC Technologies Vice President John Gremp agrees that the industry as a whole is reluctant to do deep-water "firsts."

"It's a bit of a contradiction. The industry is so innovative, but there's also this reluctance when you go offshore because you don't want to get too ahead of yourself. The risk of failure is so high and the costs are so great," he said.

At the OTC this year, Houston-based FMC is being feted for what it calls the first subsea separation system that extracts the natural gas from the liquids coming out of a well before putting those liquids into a bigger separation vessel to break down the oil from the water produced.

By taking gas out of the oil and water mixture before it goes into the separation vessel, the equipment can be built smaller and with thinner steel walls because the hardware doesn't have to withstand so much pressure.

"The smaller you can make the vessel, the better," says Clint Metcalf, general manager of FMC Separation Systems, adding the new system is half the size of traditional systems.

Norway's Statoil has agreed to be the first company to deploy the compact subsea separator, with plans to install it at its Tordis field in the North Sea.

Subsea separation systems are growing in vogue with energy companies because they allow multiple fields to be tied together with underwater pipelines, sending all the oil and gas produced to one central processing facility onshore.

Separating the gas, oil and water on the ocean floor helps eliminate ice plugs that form and stop up a line.

Even more compelling, Gremp said, is that subsea separation systems can boost the amount of oil and natural gas ultimately produced from a field. That's because pumping the gas and liquid all the way to the surface for separation creates a column of pressure that counters the reservoir's natural pressure, pushing oil and gas to the surface.

Eliminating that back pressure lets more oil and natural gas flow out on its own.

Gremp said Statoil plans to test FMC's technology on its Tordis field as a way to gin up production. Norway's goal is to hit a recovery rate of 55 percent for every oil field, but Tordis' expected recovery rate is only 49 percent.

Using FMC's compact subsea separation system to eliminate back pressure on the well should let millions of additional barrels of oil flow forth, getting the Tordis field halfway to its goal of 55 percent, according to Gremp.

NOTES: ljcook£chron.com

GRAPHIC: Photos: 1. BRANCHING OUT: Azura's subsea tree, the Nautilus SS-10, is on display at Reliant Center.; 2. REAL TIME: Darrel Fanguy, Project Manager for Halliburton's Real Time Decision Center, does a quick demonstration of touch-screen computer systems that allow multiple factors to be evaluated while making real-time drilling decisions. (p.6)
1. NICK de la TORRE PHOTO : CHRONICLE, 2. BILLY SMITH II : CHRONICLE

LOAD-DATE: April 30, 2006

Business Wire

April 10, 2006 Monday 1:07 PM GMT

DISTRIBUTION: Business Editors; Energy Editors; High-Tech Editors

LENGTH: 736 words

HEADLINE: Landmark and Pavilion Technologies Work Together to Advance the Digital Oil Field of the Future

DATELINE: HOUSTON & AUSTIN, Texas April 10, 2006

BODY:

Combined technologies will offer operators a dynamic integrated model of oilfield assets for identifying optimal courses of action based on accurate understanding of production potential, using real time data.

Landmark, a brand of the Halliburton (NYSE:HAL) Digital and Consulting Solutions Division (HDCS), enters into a relationship with Pavilion Technologies to embed Pavilion's key modeling, control, and optimization technology engine into their DecisionSpace(R) Production(TM) solution, a comprehensive new offering extending Landmark's capabilities in the production domain.

Landmark's DecisionSpace Production solution will advance the digital oilfield of the future by using the embedded Pavilion technology to generate in relative real time a single integrated asset optimization model, which incorporates the reservoir, wells, gathering network and production facilities, and is capable of supporting optimal decisions. This integrated production operations solution creates a virtual collaborative environment that will provide total asset awareness, a decision support system enabling management-by-exception, and automated production workflows that orchestrate the collaboration necessary to achieve and sustain production optimization.

The combination of Landmark and Pavilion technologies will position Landmark as the leading provider of Integrated Production Operations solutions to meet the production challenges faced by the industry. Operators expect Integrated Production Operations to create billions of dollars in value by increasing production and recovery while decreasing costs.

"Technology from these two companies resolves one of the fundamental problems faced by the industry in defining the digital oilfield of the future," said Jonathan Lewis, vice president, Innovation and Marketing, HDCS. "The technology overcomes the limitations of traditional modeling technologies and establishes critical sub-surface/surface interfaces. By overcoming the resource and time constraints

of traditional full physics simulators in relating critical interdependencies that occur across the value chain, it enables accurate, dynamic and relevant interpretation of multiple scenarios and actual conditions in real time.

Due to the scope of the modeling engine and the execution speed of the decision support system, this technology relationship makes the vision of a real time integrated asset model a pragmatic and compelling reality."

Ralph Carter, president and chief executive officer of Pavilion Technologies, said: "This relationship validates the power and value of Pavilion's predictive modeling engine. Our agreement allows Landmark's customers to incorporate a variety of model types to create one single asset model that executes fast enough to make a real impact."

About Pavilion Technologies www.pavtech.com

Pavilion Technologies' model-based software drives profitability for leading manufacturers like Cemex, Dyckerhoff AG, Glacial Lakes Energy, NOVA Chemicals, Nestle, SABIC Europe and TOTAL Petrochemicals. Based on the most powerful predictive modeling software in the industry, Pavilion's solutions facilitate quick response to market demands, continuous reduction of costs, consistent achievement of quality targets, and enhanced air quality. With a commitment to delivering the highest ROI in the industry, Pavilion's ValueFirst(TM) customer engagement methodology ensures Predictable Results. Guaranteed(sm).

About Landmark

Landmark, a brand of the Halliburton Digital and Consulting Solutions Division, is the leading supplier of software and services for the upstream oil and gas industry. The company's software solutions span exploration, production, drilling, business decision analysis and data management. Landmark offers a broad range of consulting and services that enable customers to optimize their technical, business and decision processes. Visit the Landmark Web site at www.lgc.com for more information.

Halliburton, founded in 1919, is one of the world's largest providers of products and services to the petroleum and energy industries. The company serves its customers with a broad range of products and services through its Energy Services Group and KBR.

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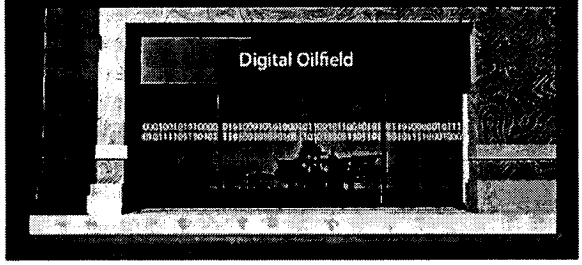
LOAD-DATE: April 11, 2006

http://209.85.165.104/search?q=cache:ZuF-5MNYtw4J:www.hdinc.com/Digital-Oilfield/index.html+digital+oilfield&hl=en&ct=clnk&cd=2&gl=us 02/22/2007 10:04:52 PM

H O L L A N D & D A V I S

MANAGEMENT CONSULTING AND PROJECT SUPPORT SERVICES



Business Success Solutions for The Digital Oilfield (DOF)

Our Value Proposition?

Business Success from your DOF initiative ...
on target, on time, and on budget ...
taking it all the way to the bank!

We ensure that business case is achieved, that implementation and business results happen on time, and that the overall spend/budget for the business side of implementation is met.

What's the Opportunity?

The **Digital Oilfield** Formula for Success is known and can be applied to every DOF application. Leveraging rapidly-advancing **digital** technology promises to revolutionize parts of the work in the oil patch if, and only if, it is successfully implemented! More and better data, real-time decision-making capability, remote manipulation and "smart assets" portend gains in performance, productivity and profits. **Digital Oilfield** initiatives are gearing up, but there may be a problem...

What's the Problem?

The **Digital Oilfield** Formula for Success requires a full suite of Business Success Practices to ensure business results ... on target, on time, and on budget.

The Problem? Frequently those required business practices are weak - or totally missing - from DOF projects! Even the best DOF technology is useless if it isn't fully utilized on a day-to-day basis by the operational and business sides of the organization.

The unfortunate history of big systems implementations (including DOF) is plagued with a dramatically unbalanced application of time, work and resources ... with the technical configuration of the software getting "generally adequate support" while the preparation of the business organization has been "terribly under-worker, under-resourced and late."

(Click here for an entertaining but all too familiar example)

Holland & Davis (H D) works with clients to ensure that their **Digital Oilfield** (DOF) initiatives become both Technical and Business Successes. Holland & Davis specializes in providing the Business Solution Services needed to fully exploit new technology. Technology projects working in relative isolation can't produce the desired results!

What's the Solution? ...the DOF Success Formula

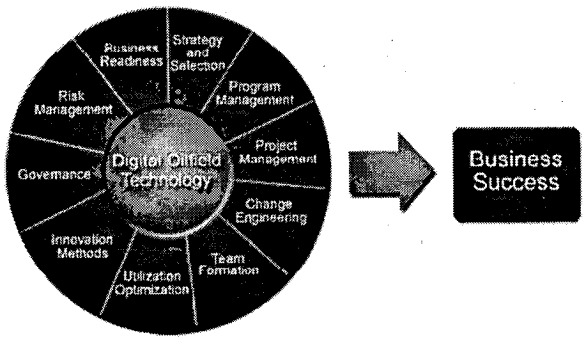
The Solution is driven by the "DOF Success Formula." We use the term "formula" to signify that there are a concrete set of actions that must be taken, in a particular sequence, without omission in order to achieve success. How could there be a formula, you ask? After more that three decades of implementing big computer systems, enough research and experimentation has been conducted to precisely identify a success formula.

(Technical Effectiveness) x (Business Readiness) = Business Success

- **Technical effectiveness** is defined as "the full implementation of a software application that fully meets the technical requirements of the Business Case (of Business Plan) as developed during the planning for the DOF initiative." In other words, technical effectiveness means that valid, functional, fully-operative software has been properly configured to work in the user's business environment.
- **Business Readiness is defined as** "all business users are ready (capable and motivated) to put the DOF technical application to work at Startup (or Go Live)." In other works, Business Readiness means that the business organization(s) will fully utilize the new DOF system just as soon as the application is started.
- **Business Readiness is achieved** by the application of a defined set of business practices that enable the business organization to be fully capable and motivated to "to go to work at go live."

be fully capable and motivated to "to go to work at go live."

In other words, the DOF technical project/initiative must be surrounded by business success practices that "clear the way," keep managers aligned and committed, and "get the business ready" to exploit the new technical solution. Those Business Success Practices are shown in the diagram and list below



What Services Do We Offer? - *Click here for our brochure*

- **Strategy and Selection** - A DOF strategy must be driven by a business strategy that has a high chance of success and executive leadership. HDI offers business strategy development and implementation services, as well as a full management of DOF selection processes.

- **Executive Advocacy** – Almost everyone knows by now that "executive commitment" is needed for implementation success. While "commitment" is necessary, it is far from "enough." Holland & Davis has developed and tested tight and precise "prescriptions" for executive behavior, for all "C-level execs (CEO, COO, CFO, CTO, and CIO). Holland & Davis has the senior, credible people who can influence executive behavior while providing the executive advocacy required for DOF success.

- **Program Management** - A technical initiative will have many technical and business "moving parts" or projects that we can drive to completion for business success. - *See our project management framework*

- **Project Management** - There is no substitute for disciplined project management. We can bring project management methodology, tools, Project Managers and staff to provide the focus and resources needed for business success. We are a Project Management Institute (PMI) Registered Education Provider and we teach Project Management globally.

- **Change Engineering** - New technology must be engineered into place inside a business organization ... if business objectives are met. We bring SOA (patent pending) methodology experienced leaders and staff to get your job done. - *See a list of our DOF Change Engineering Tools*
- **Team Formation** - An effective and efficient team is needed to do the hard work of technology insertion and integration. We provide complete team services: recruitment, selection, chartering, teambuilding, and conflict resolution. - *See our DOF Team Tools list*
- **Utilization Optimization** - The key to meeting the business objectives of a new technology is Full Utilization by the business. We structure technology implementations for 100% utilization at "go live."
- **Innovation Methods** - New technology initiatives require huge doses of innovation for effective insertions in a business organization. We bring years of innovation and technology transfer experience to support your DOF Initiative. - *See what NASA thinks about our Tech Transfer capability*
- **Governance** - Steering a DOF project is easier said than done, with many stakeholders with different business agendas. We provide a :decision structure" that aligns stakeholders while ensuring that needed decisions are made on time.
- **Risk Management** - Inserting of a new technology runs three risks; (1) Will it work? (2) Will people use it? (3) Will it make money for the company? We bring unique risk assessment and mitigation tools and support to ensure business success. - See our Risk Management Framework
- **Business Readiness** - While new technology is being made ready for the business, the business must be made ready for the technology. We bring our patented Business Readiness methods and tools to ensure readiness ... on target, on time, and on budget.

Who is on our Service Team?

HDI is fortunate to have more than a dozen senior consultants (with more than 20 years business experience) on our consulting team. Their expertise and maturity can bring business results to your DOF initiatives.

- **View Our Team**

What tools and products do we offer?

Thanks to a lot of research, experimentation, and the generosity of our clients, we have accumulated a full range of tools and templates for the Business Practice Solutions needed for DOF business success. Our tools are simple and practical, but battle proven. We can customize a tools set for you and even training you to use them.

- **View Holland & Davis Tools for Implementing DOF Initiatives**

What do we know about the subject?

Apparently the editorial boards of the industry's top journals think we know a lot. More than a dozen of our articles on implementing **digital oilfield/technology** projects have been published in the past three years.

- **View HDI Articles on Implementing DOF Initiatives**

Who have we worked for?

Our first published article about Technical and Business success was published right after our first implementation innovation ... in 1974. We have been providing Business Service Solutions ever since!

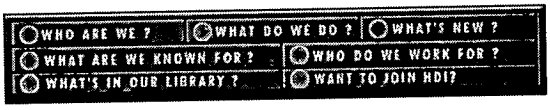
- **View Some of the Firms we have worked for**

What might you do next?

Bottom line: Life is too short to have your good technical work thwarted and frustrated by people problems, organizational politics, and inadequate management practices. We can help ease the frustration and move your technical initiatives ahead.

Call Mike Campbell at 713.877.8130 for specific information on our services.

Contact Us for a Digital Oilfield Jump Start Assessment!
Dutch Holland or Mike Campbell, 713.877.8130



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Document Overview

Demystifying the Digital Oilfield

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Number of Figures	7

Overview

This Energy Insights report presents the opportunities and challenges for business process improvement in the exploration and production (E&P) industry through **digital oilfield** initiatives. A brief introduction to the **digital oilfield** is followed by discussions on different industry perspectives on the applicability of **digital oilfield** concepts. Oil and gas company management challenges and emerging technologies are explored. Key vendor strategies and success factors determining the adoption of technology under the **digital oilfield** umbrella are highlighted. Future challenges, adoption patterns, market trends, and potential pitfalls are examined. The report also provides recommendations and guidance for business and IT executives. The **digital oilfield** aims at deploying software, hardware, instrumentation, communications, and technology services to optimize production, enhance recovery, and integrate significant engineering and business processes within and across upstream, midstream, and downstream operations.

According to Sekhar Venkat, research manager, Energy Upstream Strategies, "Two key factors will determine the success of emerging **digital** technologies. First, successful pilot projects that achieve benchmark reservoir recoverability and production optimization goals could result in adoption of applicable solutions to other E&P projects. Second, the ability of vendors to minimize the total cost of software, hardware, and services and simultaneously achieve business performance improvement goals would alleviate the risk averseness of E&P companies. While increased E&P budgets are beginning to translate into IT spending, this spending is still contingent upon long-term global economic growth patterns."

Companies Covered

Shell, Marathon Oil, Chevron, Schlumberger, Invensys, IBM, SAIC, CGI, Vertex, IAC, Microsoft, SAP, Halliburton, Murphy Oil, Statoil, Paradigm

Regions Covered

Worldwide

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SPE 97288

Continuing Education Needs for the Digital Oil Fields of the Future

I. Ershaghi, SPE, U. of Southern California, and Z. Omoregie, SPE, Chevron

This paper was prepared for presentation at the 2005 SPE Annual Technical Conference and Exhibition held in Dallas, Texas, U.S.A., 9–12 October 2005.

Abstract

The increasing demand for cost effective development of oil and gas resources in harsh environments and the need to squeeze more reserves from mature fields have led to an industry wide push to develop the framework for the digital

and optimize the cost-effective extraction of oil and gas production from oilfields. The industry sees a need to transform the way we currently operate these assets. For such operations, the information assets are critical to the success of the asset management. Large volumes of information become a liability when they are distributed across an organization, locked up in disparate applications and organized units using terms that are only relevant to one system. Oil companies are developing and implementing data structures that give them the ability to easily locate and rapidly deliver information across the company enabling professionals and decision makers to react instantly to changes. The vision of the future requires significant improvements in data management, better integration of technical applications across different disciplines and wider breadth in the technical knowledge of the asset management teams (technical and operational). The

industry-wide push to develop the framework for the digital oilfields of the future[1] (called by different names in the industry: "smart fields", "*i-field*", "efield", "digital oil field of the future", or DOFF,.. etc). Over the past few decades, the world has seen tremendous leaps in the development of hardware and software tools that measure, analyze and optimize process systems. The cost of these tools has continued to decrease. The increased infusion of these technologies in oil and gas asset management has helped many to see greater benefits from making fundamental changes in the infrastructure used to develop oil and gas fields and the work tools and processes used to manage them. Currently available technologies already allow oil and gas professionals to work in a more collaborative environment than ever before. As the industry focuses on developing the technologies required to implement the digital oilfield of the future, the industry must also, simultaneously, focus on the training and recruiting of the manpower qualified to operate digital oilfields. Continuing education must include elements that can provide the practicing professionals with the tools needed to manage the digital oilfield of the future. For students aspiring to join the industry, academia needs to prepare them to manage oil and gas assets with tools and work processes different from what are used today.

Introduction

Before discussing the educational requirements, we need to review the concept of the digital oilfields from the standpoint of technology demand and the opportunities they can provide for the industry. A digital oilfield is one incorporating the wide spread use of technical innovations to measure, analyze

vision also includes more collaborative problem solving and decision making by the technical professionals.

This type of operating paradigm can allow personnel to frequently acquire reservoir data, capture, monitor, and analyze operating field data in real-time and review and update up-to-the minute integrated reservoir, well, and facility models. The use of portals and new visualization tools will allow access to data, interpretations and models by technical teams whose members may be physically separated by thousands of miles. Successful companies will be those geared to operating in an ever-changing electronic world that relies on increasing levels of communication and technical interchange. This will require substantial investments in sensors and sensor networks, process optimization tools, artificial intelligence, automation and control and improved work processes to facilitate progress, foster creativity and accelerate change. The prize will be reducing well intervention frequency and costs, increasing cash flow and increasing ultimate recovery – ultimately increasing asset value.

A pre-requisite for successful management of digital oilfields is the utilization of collaborative decision making, (CDM), by ensuring that professionals are provided with easily accessible and accurate information, essential for the planning of their operations. This includes timely and critical information about surface and subsurface facilities, reservoir conditions and external controlling factors. In addition to sharing the same information across the asset team, decision support tools are developed that integrate all elements of the asset that have a bearing on the decision and external economic parameters. Advanced process optimization, coupled with wellbore

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Integrated Operations

These search terms have been highlighted: **digital**
These terms only appear in links pointing to this page: **oilfield**

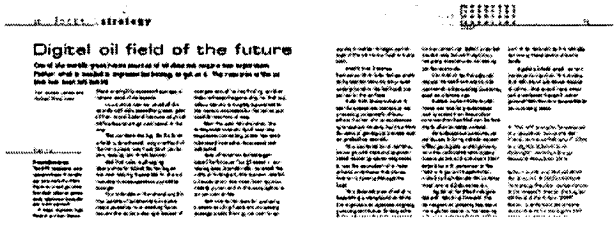
+ Petroleum resource management
+ The environment
– **Integrated Operations**
Edriftforum
Research and development

Digital oil field of the future

19.5.2006

One of the world's great future sources of oil does not require new exploration. Rather, what is needed is improved technology to get at it. This resource is the oil that has been left behind.

Text: Judson Jacobs and Richard Ward, Cera


Digital oil field of the future

EDRIFTFORUM

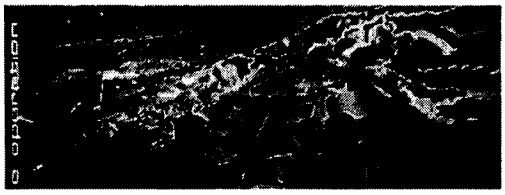
-Management group

-Mandate

-Members

ACTIVITIES

-Analysis of the consequences of introducing Integrated Operations



Think of a lightly squeezed sponge; it retains most of its liquids.

In a similar manner, most of the world's oil fields leave the greater part of their liquid behind because physical difficulties and high cost stand in the way.

The numbers are big. By the time a field is abandoned, only one third of the oil in place may have been produced, leaving two thirds behind.

But that ratio is changing. New computer-based technologies are now making it possible for the oil industry to squeeze more out of the sponge.

Our estimate is that about 125 billion barrels of additional oil can be made available from existing fields around the world utilising a basket of proven technologies collectively known as "the **digital** oil field of the future".

Successfully deploying these technologies would be like finding another major oil-exporting country, for that 125 billion barrels is roughly equivalent to the current estimates for the entire producible reserves of Iraq.

Over the past two decades, the widespread availability of ever less expensive computing power has revolutionised how oil is discovered and extracted.

New information technology-based techniques like 3D seismic surveying have dramatically improved the odds of finding oil. The success rate for oil exploration has risen from approximately 25 per cent in the early 1980s to 40 per cent today.

And new techniques for pumping oil from existing fields are increasing average yields from 35 per cent to 40 per cent or even more.

The **digital** oil field of the future is a suite of technologies that allows producers to extract a larger percentage of the oil from a field at lower cost.

Here's how it works: Numerous fibre-optic temperature and pressure sensors are placed underground in the field and connected to the surface.

in the field and connected to the surface.

Data from these sensors is sent to operations centres at the producing company's offices, where it is fed into computerised optimisation models, built up from decades of geological surveys and oil production records.

This combination of realtime,below-ground data and sophisticated modeling allows engineers to see the equivalent of a three-dimensional movie that shows how oil is flowing through the field.

This detailed view of what is happening underground enables the engineers to optimise ongoing pumping and future drilling schedules, allowing them to capture a larger percentage of the oil in the field. In addition, sensors placed on equipment can detect potential breakdowns before they occur, reducing downtime and lowering production costs.

Information technology can reduce the need to have on-site personnel in demanding locations, such as offshore rigs.

Indeed, some offshore platforms are now fully automated and operated from Nasa-style command centres that can be hundreds of miles away on land.

Virtualisation also allows oil producers to bring data to experienced geologists and engineers, who can be located at company headquarters and still share their expertise with personnel in the field in Nigeria or Kazakhstan, linked by high-bandwidth communications and data networks.

Digital oil field technologies are still marching forward. The Norwegian oil industry has become a global leader in harnessing information technology to enhance its production practices.

It has set a target of 65 to 70 per cent recovery for a good part of its reserves and is already achieving these levels in some fields.

Digital oil field practices will continue to improve. This means that billions of additional barrels of oil-oil that would have previously remained trapped underground- will become accessible to us in coming years.

*. This article originally appeared in a special section of The Wall Street Journal on February 7, 2006 in a slightly different form. Copyright Cambridge Energy Research Associates 2006 Judson Jacobs and Richard Ward are directors in Cera's Upstream Technology Practice. Judson Jacobs is the research lead for the **Digital** Oil Field of the Future (DOFF) Forum, and Richard Ward is the research lead for the **Digital** E&P Strategies Advisory Service.*

facts

E-operation forum

The NPD established the e-operation forum 18 months ago as a result of a White Paper on oil and gas activities which called for government initiatives to boost the use of this approach.

Principal engineers [illegible] and Turid Øygard have enthusiastically taken the lead on this work

Principal engineers Inger Fjærtoft and Turid Øygard have enthusiastically taken the lead on this work within the NPD.

E-operation in brief

Adopting modern computer technology in a way which radically alters work processes in the petroleum industry is the core of e-operation.

On producing fields, this means faster and better interaction between land and offshore, moving functions ashore and new maintenance strategies.

Sub-surface data transmitted directly to an operations room on land help to improve utilisation of specialists, enhance decision-making processes, improve recovery and cut production costs.

New Norwegian fields such as Ormen Lange and Snøhvit have applied this philosophy to the full, with subsea installations controlled directly from land.

Read also:

- *Joining forces to work more efficiently*
- *Just picture this*
- *Keep control offshore*

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- Drilling
- Fluid Services
- Optimized Computing Solutions
- Pipeline & Process Services
- Reservoir Testing / Analysis
- Sand Control
- Service Tools
- Software
- Stimulation
- Well Completions
- Well Intervention
- Wireline & Perforating

Products & Services List

information from all of Halliburton's Energy Services Group product service lines; and up-to-date data from the American Petroleum Institute (API).

For more than 75 years, the RedBook™ cementing tables have been a part of Halliburton's legacy and the industry preferred printed technical reference. Today, Halliburton is setting a new industry standard for **digital** technical tools with the evolution of the eRedBook **digital oilfield** toolkit, an electronic version that goes beyond what has been seen in the printed version.

A one-time download to your hard drive from Halliburton's Web site is all you need to get started. When connected to the internet, the eRedBook **digital oilfield** toolkit updates automatically with the latest information, technology and best practices.

The new **digital** eRedBook engineering tool will complement the printed RedBook as an indispensable resource to employees and customers in all work environments.

Minimum System Requirements

- Windows® XP w/SP2 or Windows 2000
- .NET 1.1
- 1 GHz or faster processor
- 256 Mb of RAM
- 32 MB Video Card
- 60 - 220MB of Hard Drive space (depending on options installed)

Download the eRedbook.

Log in

Landmark and Pavilion Technologies Work Together to Advance the Digital Oilfield of the Future

April 10, 2006

Combined technologies will offer operators a dynamic integrated model of oilfield assets for identifying optimal courses of action based on accurate understanding of production potential, using real time data.

HOUSTON AND AUSTIN, Texas -Landmark, a brand of the Halliburton (NYSE: HAL) **Digital** and Consulting Solutions Division (HDCS) enters into a relationship with Pavilion Technologies to embed Pavilion's key modeling, control, and optimization technology engine into their DecisionSpace® Production™ solution, a comprehensive new offering extending Landmark's capabilities in the production domain.

production domain.

Landmark's DecisionSpace Production solution will advance the **digital oilfield** of the future by using the embedded Pavilion technology to generate in relative real time a single integrated asset optimization model, which incorporates the reservoir, wells, gathering network and production facilities, and is capable of supporting optimal decisions. This integrated production operations solution creates a virtual collaborative environment that will provide total asset awareness, a decision support system enabling management-by-exception, and automated production workflows that orchestrate the collaboration necessary to achieve and sustain production optimization.

The combination of Landmark and Pavilion technologies will position Landmark as the leading provider of Integrated Production Operations solutions to meet the production challenges faced by the industry. Operators expect Integrated Production Operations to create billions of dollars in value by increasing production and recovery while decreasing costs.

"Technology from these two companies resolves one of the fundamental problems faced by the industry in defining the **digital oilfield** of the future," said Jonathan Lewis, vice president, Innovation and Marketing, HDCS. "The technology overcomes the limitations of traditional modeling technologies and establishes critical sub-surface / surface interfaces. By overcoming the resource and time constraints of traditional full physics simulators in relating critical interdependencies that occur across the value chain, it enables accurate, dynamic and relevant interpretation of multiple scenarios and actual conditions in real time.

Due to the scope of the modeling engine and the execution speed of the decision support system, this technology relationship makes the vision of a real time integrated asset model a pragmatic and compelling reality".

Ralph Carter, president and chief executive officer of Pavilion Technologies, said: "This relationship validates the power and value of Pavilion's predictive modeling engine. Our agreement allows Landmark's customers to incorporate a variety of model types to create one single asset model that executes fast enough to make a real impact."

About Pavilion Technologies
Pavilion Technologies' model-based software drives profitability for leading manufacturers like Cemex, Dyckerhoff AG, Glacial Lakes Energy, NOVA Chemicals, Nestlé, SABIC Europe and TOTAL Petrochemicals. Based on the most powerful predictive modeling software in the industry, Pavilion's solutions facilitate quick response to market demands, continuous reduction of costs, consistent achievement of quality targets, and enhanced air quality. With a commitment to delivering the highest ROI in the industry, Pavilion's ValueFirst™ customer engagement methodology ensures Predictable Results. Guaranteed ℠. www.pavtech.com

About Landmark
Landmark, a brand of the Halliburton **Digital** and Consulting Solutions Division, is the leading supplier of software and services for the upstream oil and gas industry. The company's software solutions span exploration, production, drilling, business decision analysis and data management. Landmark offers a broad range of consulting and services that enable customers to optimize their technical, business and decision processes. Visit the Landmark Web site at www.lgc.com for more information.

About Halliburton
Founded in 1919, is one of the world's largest providers of products and services to the petroleum and energy industries. The company serves its customers with a broad range of products and services through its Energy Services Group and KBR. Visit the company's World Wide Web at www.halliburton.com

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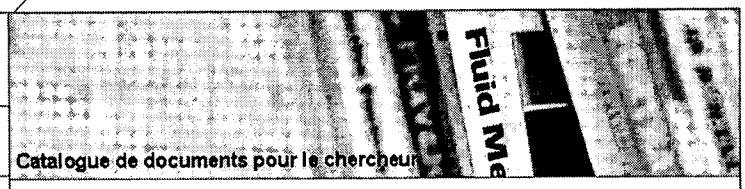

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Affiliation(s) du ou des auteurs / Author(s) Affiliation(s)
(1) Edinburgh Petroleum Services, ROYAUME-UNI

Résumé / Abstract
With some digital oil field vision, we may not operate fields from the beach, but we can uncover hidden sources of production growth lying dormant in the wells and facilities we already operate.

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The Gravitas System - Unlock the potential of the **digital oilfield**

Drilling for oil has never been routine. Today, wells are becoming more and more complex and the E & P industry depends increasingly on technology to meet the rigorous demands of recovery and production.

The right technology can unlock the potential of the **digital oilfield**, ensuring long term competitiveness and securing maximum leverage from your data.

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maximum leverage from your data.

Now, our pioneering Gravitas software suite not only connects geologists to the **digital oilfield** for the first time, it integrates all your well data and links asset and office to take you to new levels of data optimisation. Gravitas is the corporate electronic wellfile.

Gravitas is comprised of a powerful central database with a choice of integrated modules and options.

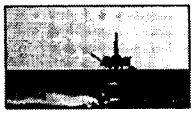
With Gravitas you can collect data real time, store current and historical well information securely, eliminate data transfer errors and produce reliable logs, charts and reports - all from one secure accurate data set.

Its multi user, multi server capability and seamless communication with corporate systems promote collaboration between disciplines for superior interpretation.

Gravitas truly integrates asset and office, anywhere in the world, to give you effortless workflows, fast response times and well informed decisions.

Connecting geology with the **digital oilfield**, Gravitas solves the traditional problems associated with data collection, integration and transfer, giving geologists the freedom to get on with valuable interpretation/analysis.

Gravitas revolutionises the **digital oilfield**.



It empowers asset teams with data integrity, improved collaboration and enhanced workflows for smarter business decisions and improved overall reservoir exploitation.

The full Gravitas System includes all the current modules

- WinDART - the data acquisition module
- Winlog - the log drawing module
- Wincore - the sedimentology option for Winlog
- Repgen - the report generating module

Digital Oilfield

October 2006

- June 2004 – SPE Board establishes Technical Sections
  - International organizations to focus on major industry disciplines .
- March 2006 – SPE Board approves formation of an International Technical Section on Information Technology
- August 2006 – IT Section board held its first meeting to develop vision, mission, and guiding

principles, and next steps

- Identification with SPE – an established, recognized professional body with 60,000 members in O&G; 10,000 members in the IT and management category.
- Use of SPE infrastructure:
  - Structure for funding for major initiatives
  - Staff to assist with initiatives planned by the section
  - Online community software
  - Website
- Build synergy through interaction with other groups within SPE (drilling, production, HSE, etc.)
- International reach and charter

The **digital oilfield** will transform the way upstream assets are managed, enabling the optimization of asset value and unlocking new energy resources.

Facilitate implementation of the **digital oilfield** by integration of information technology, people, processes in the **oilfield** business by:

- Providing best practices for integration of information technology between the sub-surface and field operations.
- Promoting establishment of a new discipline combing information technology and **oilfield** technologies including curricula and training.
- Develop information security best practices to effectively manage risk in the integrated work place.
- Provide a forum to combine IT and **digital oilfield** initiatives in the industry to create critical mass.

- Subsurface and the field operation integration. Define standard interfaces, best practices, and use cases scenarios.
- Work with the standard bodies (e.g. POSC) to promote fast track standards as needed.
- Facilitate development of reference architecture and implementations.

Effective Integration

Produce More Oil and Gas

Information Technology

Digital Oilfield Challenge

Efficient Integration

Reduce Cost

Opportunity:

Security Implication:

- An understanding of information technology and business processes is critical for the growth of E&P professionals to enable the **digital oilfield**.
- Converging of geophysical sciences and information technology leads to a new discipline – energy IT professional.
- IT Technical Section will promote curricula and training to obtain information technology business process knowledge necessary to the future of the **oilfield** business.

- Cyber-security best practices are a critical to managing the risk in the **digital oilfield**.
- The security sub-committee will focus on security enablers for the **digital oilfield**. Priority initiatives are:
  - Compliance as it applies to operations in multiple countries and multiple companies
  - Joint venture security infrastructure such as Federated Identity and 3rd party access
  - Secure workflows / business processes

- The IT Technical Section will promote best practices, knowledge sharing in IT/**digital oilfield** by:
  - sponsoring meetings and major industry conferences. Focused initiatives for 2007 are:

  1) **digital oilfield** conference

  2) intelligent energy conference

  3) **digital** security conference

  - Working with other industry organizations (API, POSC, SEG) to pull IT and **digital** energy initiatives in the industry under one umbrella to provide clarity and critical mass for the members.

- Chair – Mehrzad Mahdavi, SLB
- Board:
  - Gary Masada, President IT, Chevron
  - Steve Comstock, CIO upstream, ExxonMobil
  - Patrick Hereng, CIO Total
  - Don Moore, VP & CIO, Occidental Petroleum Corp.
  - Washington Salles, President IT, Petrobras
  - Richard Jackson, Chief Information Protection Officer, Chevron
  - Anthony Foster, CIO Shell (nomination in the process)

- Communicate back to interested parties within SPE for the status of the IT / **Digital Oilfield** Technical Section and its board members
- Broad communication of the IT / **Digital Oilfield** Section to the industry – on going
- Form work groups to develop strategies, goals, and projects related to the mission and principles.
- Work groups report back to the board by Nov. 30.
- The Board meets in December to review and approve strategies/goals/proposed projects